

Maximum rainfall in one hour or less—Continued.

| Station. | Maximum fall in— | | | | | |
|-------------------------------|------------------|-------|---------|--------|---------|-------|
| | 5 min. | Date. | 10 min. | Date. | 1 hour. | Date. |
| | Inch. | | Inch. | | Inch. | |
| Memphis, Tenn..... | 0.15 | 30 | 0.20 | 22, 30 | 0.70 | 30 |
| New York, N. Y..... | 0.30 | 23 | 0.40 | 23 | 1.15 | 23 |
| New Orleans, La..... | 0.22 | 7 | 0.24 | 7 | 0.38 | 7 |
| Norfolk, Va..... | 0.30 | 25 | 0.46 | 25 | 1.52 | 25 |
| Philadelphia, Pa..... | 0.36 | 28 | 0.50 | 28 | 0.60 | 1 |
| Philadelphia Water Works..... | 0.12 | 23 | 0.23 | 23 | 0.75 | 23 |
| Pittsburg, Pa..... | 0.10 | 11 | 0.15 | 11 | 0.27 | 11 |
| Portland, Oregon..... | 0.03 | 4 | 0.05 | 4 | 0.20 | 4 |
| Saint Louis, Mo..... | 0.35 | 11 | 0.60 | 11 | 0.80 | 11 |
| Saint Paul, Minn..... | 0.35 | 20 | 0.62 | 20 | 1.16 | 20 |
| San Diego, Cal..... | | | | | | |
| San Francisco, Cal..... | | | | | | |
| Savannah, Ga..... | 0.50 | 28 | 0.75 | 28 | 1.70 | 28 |
| Washington, D. C..... | 0.22 | 24 | 0.32 | 24 | 0.70 | 24 |
| Wilmington, N. C..... | 0.43 | 4 | 0.64 | 2 | 1.60 | 2 |

* Less than 0.05 in 1 hour.

HAIL.

Description of the more severe hail storms of the month is given under "Local storms." Hail was reported as follows: 1st, Colorado, New Mexico. 2d, Colorado, Indiana, New Mexico, North Dakota. 3d, Colorado, Nebraska, Wyoming. 4th, Colorado, Oregon, South Dakota, Wyoming. 5th, Colorado, Montana, North Dakota, Wisconsin, Wyoming. 6th, Minnesota, North Dakota, Washington. 7th, Colorado, Minnesota, New Hampshire, New York, North Dakota, Wisconsin, Wyoming. 8th, Kansas. 9th, Colorado, Illinois, Michigan.

HIGH WINDS.

(In miles per hour.)

Wind velocities of 50 miles, or more, per hour were reported at regular stations of the Weather Bureau as follows: 21st, 82, sw., at Green Mountain, Me.; 80, w., at Mount Washington, N. H. 28th, 52, w., at Mount Killington, Vt.

LOCAL STORMS.

1st.—Heavy rain flooded farm lands near Baltimore, Md. In Franklin county, Pa., lightning struck a barn, killing 2 children. A severe storm was reported at Checotah, Ind. T., about 11 p. m.; several buildings were destroyed, stock killed, and damage caused to growing crops.

2d.—A thunderstorm, with exceptionally heavy rainfall, passed northeast over Louisville, Ky., in the evening. A severe windstorm was reported in Anne Arundel county, Md., in the afternoon.

3d.—During a heavy thunderstorm at Lexington, N. C., 2 persons were stunned, and a tree was struck by lightning. Heavy rain flooded lowlands west of Custer Station, Mont.

4th.—At Portland, Oregon, a thunderstorm, with hail, occurred in the evening. Heavy thunder, rain, and hail storms caused destruction to live stock and crops in Miner and McCook counties, S. Dak.

5th.—Heavy rain flooded small streams and lowlands in Dauphin and Chester counties, Pa., and Carroll county, Md. During a heavy thunderstorm in the evening at Churchs Ferry, N. Dak., 2 buildings were struck by lightning. An

10th, Iowa, New York, South Dakota. 11th, Colorado, Iowa, Maryland, Minnesota, Nebraska, New Jersey, New York, Oregon. 12th, Connecticut, Maryland, Texas. 13th, Georgia, Illinois, Iowa, Minnesota, Missouri, Nebraska, North Dakota, Wisconsin. 14th, Colorado, Illinois, Indiana, Missouri, Nebraska, Ohio, South Dakota, West Virginia. 15th, Colorado, Connecticut, Illinois, Indiana, Minnesota, Montana, Virginia. 16th, Indiana, Ohio, Wisconsin. 17th, Colorado, Wyoming. 18th, Colorado, Iowa, Nebraska. 19th, Nebraska, New York, North Dakota. 20th, Illinois, Kentucky, Nebraska. 21st, Colorado, Kansas, Missouri, New Jersey, Texas, Wyoming. 23d, Virginia. 24th, Nebraska. 25th, California, Colorado, Minnesota, Montana, South Dakota. 26th, Texas. 27th, Colorado. 28th, Arizona, Colorado, North Carolina, South Dakota. 29th, Colorado, Iowa, North Dakota, Wisconsin. 30th, Michigan. 31st, New York. Sleet fell in Colorado on the 17th, 29th, and 30th.

SNOW.

Snow was reported in the Paradise Mountains, 40 miles north of Winnemucca, Nev., on the 6th; in the mountain ranges of Colorado on the 22d and 23d; at Cumberland, Barron Co., Wis., the evening of the 22d and the morning of the 23d; and at Buffalo, N. Y., on the 28th.

Records for August of the last 10 years show that snow fell at Harrisburg, Pa., and along the upper Sault de Ste. Marie river, Mich., in 1890; at Mammoth, Pa., in 1889; at Hartford, Conn., and Wilkes Barre, Pa., in 1885; and at Sandusky, Ohio, and Grand Haven, Mich., in 1882.

WINDS.

unusually heavy rainstorm was reported in Stark county, N. Dak. A heavy hailstorm occurred at night at Boulder, Jefferson county, Mont. At Fort Assiniboine, Mont., a heavy thunderstorm begun about 11 p. m. and continued about 3 hours; the storm was reported the most severe ever experienced in that section. A heavy rain and hail storm in the afternoon damaged standing grain at Lander, Wyo.

6th.—Several buildings were struck by lightning in Oxford and Androscoggin counties, Me. Near Crookston, Minn., a heavy rain and hail storm moved southeast in a path about 1½ mile in width and 8 miles in length, causing injury to grain. Heavy thunderstorms occurred in Manitoba; several fatalities were reported. At Dickinson, N. Dak., a wind, rain, and hail storm at night injured grain.

7th.—A heavy thunder, rain, and hail storm moved southeast over Manchester, N. H., in the afternoon; hail fell in a path about 2 miles in width and 3 to 4 miles in length; the hailstones ranged to ¾ inch in diameter, were spherical in form, and generally of clear, solid ice; 0.50 inch of rain and melted hail fell in ten minutes, and the temperature fell 20° in 35 minutes. Severe thunderstorms occurred in Connecticut. An unusually severe thunderstorm moved north over Augusta, Ga., in the evening; the wind reached a velocity of 40 miles per hour from the southeast, large trees were prostrated, and the temperature fell 26° in 4 hours. Heavy rain and hail storms were reported in northwest Minnesota in the evening. Thunderstorms, with heavy rain and high wind, were reported in North and South Dakota. A severe storm was reported in the Gulf of California and in Lower California; this storm lasted several days and was very destructive.

8th.—A heavy storm prevailed over upper Michigan and the north part of lower Michigan. At Marquette, Mich., a violent thunderstorm occurred in the evening; the wind reached a velocity of 46 miles per hour, causing damage to trees, etc. At Sault de Ste. Marie, Mich., thunderstorms, with heavy rain, occurred at intervals; streets were flooded, trees blown down, and telegraphic communication was interrupted. During a thunderstorm in the early morning at Alpena, Mich., a barn was struck by lightning and burned. In the afternoon a thun-

derstorm, with very heavy rainfall and high wind, caused great damage about Alpena, Mich. A severe wind and rain storm occurred over Chequamegon Bay, Wis., in the afternoon; at Ashland and Washburn, Wis., numerous buildings were badly damaged by high wind.

9th.—Heavy storms occurred in extreme western New York. At Buffalo, N. Y., two dark funnel-shaped clouds appeared in the west-northwest part of the city about 6.53 p. m. and moved rapidly toward the eastern section. At the Weather Bureau Office the wind reached a velocity of 32 miles per hour; the damage caused in the northern part of the city indicated a much greater wind force near the storm-center. At Niagara Falls, N. Y., a church was struck by lightning. Heavy thunder and wind storms caused considerable damage about Toronto, Ont. A very severe storm was reported in lower Michigan. At Posey, Mich., 2 barns were struck by lightning and burned. A heavy hail and thunder storm moved southeast over Bad Axe, Mich., several barns being unroofed by high wind. At Chicago, Ill., a man was killed by lightning and property was damaged by high wind. At Ottawa, Ill., lightning struck in several places. Heavy wind and rain storms in the afternoon caused immense loss in southern Iowa; light buildings were wrecked, others unroofed, and great damage was done to crops and orchards. At Davenport, Iowa, a thunderstorm began at 5 p. m., and rain fell from 7.45 to 8.40 p. m.; the wind reached a velocity of 42 miles per hour, and the temperature fell 14° in 15 minutes.

10th.—During a heavy storm in Marion county, Ind., 2 houses were struck by lightning, and damage was caused by wind. Thunder and wind storms caused considerable damage in western and central Illinois. Severe thunderstorms in central and eastern Michigan seriously damaged trees and houses. Lightning caused some damage in the evening at Dubuque, Iowa. The night of the 10-11th a heavy thunderstorm occurred at Amana, Iowa; lightning struck 3 buildings in the town, and near Amana 3 buildings were struck and some stock killed by lightning. Destructive storms were reported in Lee and De Witt counties, Tex.

11th.—A severe thunder and hail storm caused much damage at Elizabeth, N. J., in the afternoon. During a thunderstorm at Saxon, N. C., a large number of trees were struck by lightning. A heavy thunder, wind, and rain storm caused destruction in Lancaster county, Pa., and at Milton, Pa., 1 person was killed by lightning. A thunderstorm, with very heavy rain, occurred at Gratiot, Ohio, in the morning, and a house near that place was struck by lightning. A severe thunderstorm visited northwestern Illinois and southwest Wisconsin at night. At Saint Louis, Mo., a thunderstorm, with exceptionally heavy rainfall, moved southeast about noon, causing minor damage. Heavy rain fell in eastern Kansas, and at Concordia, Kans., a house was struck by lightning. A heavy hailstorm was reported in Carlton county, Minn. An unusually severe thunder and rain storm was reported at Eureka Springs, Ark. A severe thunderstorm occurred at and about San Bernardino, Cal., where a barn was struck by lightning and burned. At Riverside, Cal., telegraph instruments were burned out. Very heavy rain fell in the mountains east of Redlands, Cal., and a considerable extent of country was flooded, causing much damage to orchards, etc.

12th.—A heavy rain and thunder storm occurred near Eastport, Me., in the early morning. Thunderstorms, with hail and high wind, occurred in Connecticut in the afternoon. At New Haven, Conn., the wind reached a velocity of 40 miles per hour, and the temperature fell 18° in 13 minutes. Considerable damage was done by wind and lightning on Long Island. On Long Island Sound an excursion barge was unroofed and 13 persons were killed and many injured. Violent local storms occurred in New Jersey in the afternoon; several houses were struck by lightning, and damage was caused by high wind. At Philadelphia, Pa., the wind reached a velocity of 28 miles per hour; the temperature fell 19° in 1 hour, and 1 person was killed by lightning. In Maryland considerable

damage was done to crops by hail, and at Towson, Md., a man was reported killed by lightning. At Baltimore, Md., a thunderstorm occurred about noon, during which the temperature fell 20°, and the wind reached 36 miles per hour; a second storm, without thunder and lightning, occurred in the evening, and damage was caused by heavy rain. Heavy thunder and rain storms caused damage in West Virginia. An exceptionally severe thunderstorm passed over Willacoochee, Ga., at night; a building was struck by lightning. Near University, Miss., heavy rain injured crops. A hailstorm caused considerable damage to crops near Mesquite, Tex. Heavy rainfall caused destructive floods at Campo, San Diego county, Cal.

13th.—In Screven county, Ga., a building was struck by lightning, killing one person and seriously injuring 2 others. Heavy storms occurred in west-central Illinois; buildings, crops, etc., were badly damaged. At Meridosia, Ill., a storm, with heavy hail, thunder, and lightning, moved southeast in a path about 1½ mile in width at 6 p. m., damaging crops to the value of several thousand dollars. At Keokuk, Iowa, a thunderstorm, with a light fall of hail, began about 5 p. m. Damage was caused by hail in O'Brien and Osceola counties, Iowa; the wind reached a velocity of 30 miles per hour, causing damage to buildings, trees, etc. At Hay Springs, Nebr., a hailstorm did much damage in a path about 2 miles in width and 10 miles in length. Heavy thunder and hail storms were reported in Minnesota. At Ellsworth, Minn., a storm, with light rain and heavy hail, thunder, and lightning, moved southeast in a path about 40 rods in width, destroying buildings to the value of about \$15,000. At Lake Benton, Minn., hail caused great damage to crops, etc. Great damage was done to corn and other crops near Weston, Wis., by a heavy hailstorm. Heavy rain occurred near Calabasas, Ariz.

14th.—A destructive storm was reported in Wood county, W. Va., at night. A heavy hailstorm was reported in Auglaize county, Ohio. A hailstorm was reported in Steuben county, Ind. Heavy wind, hail, and thunder storms were reported in central Illinois. At Vandalia, Ill., a man and 2 horses were killed by lightning. Heavy wind and rain at night caused damage at Mound City, Mo. A severe wind, hail, and thunder storm occurred at Chillicothe, Mo., in the afternoon. Damage was also done by hail at Glasgow and Rockport, Mo. High wind uprooted trees and damaged crops at Langdon, Mo., and a heavy rain, thunder, and wind storm damaged fruit, crops, etc., near Oregon, Mo. Severe storms were reported in northwest Iowa and South Dakota. At Hastings, Nebr., a storm moved southeast, with rain, hail, and heavy thunder and lightning; the storm extended over a considerable area and was destructive to trees, etc. A heavy windstorm occurred at Fairbury, Nebr., about midnight, and at Jansen, 7 miles east of that place, a number of buildings were blown down.

15th.—A heavy thunder and rain storm occurred at Killingly, Conn., where several buildings were struck and some stock killed by lightning. During a heavy thunder and rain storm at Albany, N. Y., in the afternoon, a house was struck by lightning. During a heavy thunder, rain, and hail storm at Norfolk, Va., in the afternoon, a building was struck by lightning and burned; the fire extended to adjoining warehouses, resulting in an extensive conflagration. Heavy thunder and hail storms occurred in other parts of south Virginia. A windstorm caused considerable damage near Charlotte, N. C., and a heavy thunder and rain storm occurred at Beaufort, S. C. At Elderville, Ill., a thunderstorm, with heavy rain and hail, moved southeast in a path about 2½ miles in width, damaging grain. A thunder and wind storm swept over Bartholomew county, Ind., in the morning. At Elizabethtown, Ind., a storm revolving from right to left moved south of east in a path about 60 yards in width at 3.30 a. m.; heavy rain fell before, and small hail and excessive thunder and lightning attended the storm; estimated damage to buildings \$3,500. At Fulda, Minn., a thunderstorm, with high wind, heavy rain, and hail, moved southward in a path about 2½

miles in width at 4.20 p. m.; a man and a horse were killed by lightning. At Ada, Minn., a heavy thunder and hail storm, with light rain, moved southeast in a path about a mile in width at 3 p. m. A heavy thunder and rain storm occurred at Kansas City, Mo., in the early morning, and at Independence, Mo., 3 houses were struck by lightning. At Kearney, Nebr., a rainstorm, with thunder and lightning, moved northeast at 1 a. m.; a man was killed by lightning, and buildings were damaged to the extent of about \$4,000. In the evening a severe hailstorm occurred at Camp Poplar River, Mont.

16th.—A heavy thunder, wind, and rain storm visited Knox county, Ind., in the evening; buildings were struck and stock killed by lightning, and damage was done to corn and fruit. Severe storms were reported in Illinois, Missouri, and Iowa. At Galveston, Tex., 2 buildings were struck by lightning. At Denver, Colo., a man was killed, 3 others injured, and minor damage caused during a thunderstorm in the evening.

17th.—During a heavy rain and thunder storm at Nashville, Tenn., in the afternoon the temperature fell 10° in 4 minutes and 20° in 1 hour. Destructive thunder, wind, and rain storms occurred in Illinois and western Kentucky. A destructive storm was reported in Jackson county, Mich., in the evening. Damage was caused by a hailstorm in Otter Tail county, Minn. Heavy thunderstorms occurred over west Missouri and east Kansas. A heavy storm was reported in the mountains east of San Bernardino, Cal.; in the valley above Redlands, Cal., the storm was reported as having been very severe, and was attended by thunder and lightning. In Death Valley, Cal., a heavy rainstorm occurred in the morning, and a thunder and rain storm in the evening.

18th.—Great damage was done in Fayette and Hancock counties, Ill., by a severe wind and thunder storm. At Sioux City, Iowa, a man was killed by lightning, and lightning struck at points in Missouri and Iowa.

19th.—A heavy thunder and rain storm occurred at Indianapolis, Ind., in the evening; parts of the city were flooded; a boy was reported drowned, and 3 men were stunned by lightning. A thunderstorm, with heavy rain, occurred at Central City, Ky. Severe storms were reported in Michigan. At Moorhead, Minn., 2 men were killed by lightning. Great destruction by hail was reported near Sanborn, N. Dak. At Chattanooga, Tenn., lightning killed a man, and interrupted traffic on the electric railway.

20th.—An unusually severe thunder and rain storm occurred at Tampa, Fla., in the afternoon. Severe thunder, wind, and rain storms occurred in Indiana and Illinois. Severe thunder and hail storms were reported in central and eastern Minnesota. Damage was caused by lightning in South Dakota. Exceptionally heavy rainfall was reported in Montgomery county, Tenn., in the morning.

21st.—Severe thunderstorms occurred at Raleigh, N. C., and Augusta, Ga., where damage was done to electric wires.

Heavy thunder, hail, and wind storms occurred in west Missouri and east Kansas, destroying crops, damaging buildings, etc. At Kansas City, Mo., a thunderstorm, moving southeast, with heavy rain, high wind, and hail, occurred in the afternoon; the wind reached 48 miles per hour, and the hailstones were about the size of cherries; frail buildings, fences, etc., were blown down, and other minor damage done. At Hansford, Tex., a storm moved southeast in a path 150 to 200 yards in width at 4.30 p. m., its rate of advance being estimated at 75 to 80 miles per hour; no thunder and lightning were observed. During the afternoon a thunderstorm was seen gathering in the west; it divided, a part going north and the other south. The storm cloud was a dingy gray color and did not touch the ground. Small buildings were overturned and larger ones moved; hail fell heavily; damage to buildings estimated at \$700. A severe storm also visited Farwell, Tex., 7 miles north of Hansford.

22d.—Heavy rain and high wind occurred at Savannah, Ga., in the evening. An exceptionally heavy rainstorm occurred at Central City, Ky., in the morning, and at Lillington, N. C., at night. A violent thunderstorm moved northeastward over Vevay, Ind., in the morning; streets and cellars were flooded by heavy rain. During a thunderstorm at night at Galveston, Tex., a boat was capsized in the bay and 3 persons were drowned. A severe storm moved southeast over Brookston, Tex., at night.

23d.—Very heavy thunder and rain storms occurred in eastern Pennsylvania and New Jersey; a number of buildings were struck by lightning, and damage was caused by flood and high wind.

24th.—During a heavy thunderstorm in the afternoon at New Brunswick, N. J., several buildings were struck by lightning. A thunderstorm, with violent wind, damaged grain near Allison, Kans.

25th.—Heavy rain commenced at Milledgeville, Ga., causing destructive floods.

27th.—Excessively heavy rainfall caused floods in eastern New York. Western Massachusetts and parts of Vermont were visited by destructive storms.

28th.—A severe storm swept through the lower part of Newark, N. J., in the afternoon, in a path about 50 yards in width, unroofing buildings, blowing down trees, etc. The storm cloud had the appearance of a large, whirling, black ball. A heavy rainstorm in the afternoon at Anderson, S. C., damaged crops.

29th.—Thunder and hail storms were reported in east and northeast Iowa and northern Missouri.

30th.—Exceptionally heavy rain occurred in the morning at Key West, Fla., 0.60 inch being recorded in 10 minutes. A severe northeast gale prevailed along the New Jersey coast, causing some damage to seaside property. During a thunderstorm at Manton, Mich., some damage was caused by hail.

INLAND NAVIGATION.

FLOODS.

On the 2d a large area of country along the Arkansas River below Little Rock, Ark., was reported under water, and farms, railway tracks, etc., along the Yalobusha River, Mississippi, were inundated. On the 17th destructive floods occurred along the Platte River in south-central Nebraska. On the 21st heavy damage was caused in Macon county, Mo., by the overflow of the Chariton and Muscle Fork rivers. Heavy rain caused floods in the Schuylkill River about Reading, Pa., on the 23d and 24th. On the 26th great damage was caused to railways and crops by the overflow of streams in Baldwin county, Ga. On the 27th streams in east-central New York overflowed their banks, submerging a considerable extent of country and

washing away bridges and dams. On the 28th the Savannah River reached 26 feet at Augusta, Ga., and washouts were reported on railroads in that region. In North Carolina the Roanoke River was high, and on the 27th fields were submerged about Weldon, N. C.

LOW WATER.

At Dubuque, Iowa, the stage of water in the Mississippi River the latter part of the month was the lowest ever noted for August, and navigation was rendered difficult.

STAGE OF WATER IN RIVERS.

In the following table are shown the danger-points at the various river stations; the highest and lowest stages for the month, with the dates of occurrence, and the monthly ranges: